MOTION FILED
MAR 21 1980

IN THE

# Supreme Court of the United States

OCTOBER TERM, 1979

**No. 79-669**

DAWSON CHEMICAL COMPANY, et al.

*Petitioners,*

v.

ROHM AND HAAS COMPANY,

*Respondent.*

**On Writ of Certiorari to the United States Court of Appeals for the Fifth Circuit.**

## MOTION FOR LEAVE TO FILE BRIEF AMICUS CURIAE AND BRIEF OF THE AMERICAN CHEMICAL SOCIETY AS AMICUS CURIAE

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ROHM AND HAAS COMPANY,

*Respondent.*

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## MOTION FOR LEAVE TO FILE BRIEF AMICUS CURIAE

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The American Chemical Society respectfully moves this Court for leave to file the accompanying brief as *amicus curiae*. The consent of the attorneys for Respondent has been obtained. The attorneys for Petitioners have denied consent to the filing of a brief on behalf of the American Chemical Society, the position of which favors Respondent.

The American Chemical Society is a non-profit scientific and educational organization with membership of approximately 118,000 chemists and chemical engineers, reflecting a broad spectrum of academic, governmental, and industrial

professional pursuits. The objects of the Society, as stated in its charter, are

> . . . to encourage in the broadest and most liberal manner the advancement of chemistry in all its branches; the promotion of research in chemical science and industry; the improvement of the qualifications and usefulness of chemists through high standards of professional ethics, education, and attainments; the increase and diffusion of chemical knowledge; and by its meetings, professional contacts, reports, papers, discussions, and publications, to promote scientific interests and inquiry, thereby fostering public welfare and education, aiding the development of our country's industries, and adding to the material prosperity and happiness of our people.[1]

Pursuant to these goals the American Chemical Society is a leading publisher of scientific journals in all phases of chemistry and chemical engineering. The Society holds regular scientific meetings at which chemists with common interests have an opportunity to exchange scientific information and maintain professional contacts. Representatives of the Society have appeared before Congress and other governmental bodies to advise on the effect of proposed actions on science, science policy, and the contributions of science to the public welfare.

The American Chemical Society represents a cross section of the whole of chemistry as a science in the United States. The institutional support of the science of chemistry is found in colleges and universities, scientific research institutions, the chemical industry, and governmental agencies. All are interdependent in the scientific and societal sense, and they are broadly interdependent economically. Of particular interest with respect to the case at bar is the relationship between basic

[1] National Charter of the American Chemical Society, enacted as Public Law No. 358, 75th Congress (1937); reprinted in "Charter, Constitution, Bylaws, and Regulations of the American Chemical Society," Bulletin 5 of the American Chemical Society, Washington, D.C., January 1, 1980.



research—sometimes called pure science—and the applied research which leads to industrial growth. Each supports the other. The patent laws are applicable only to the results of applied research, and it is a matter of concern to the American Chemical Society that the incentive and support which the patent laws bring to this aspect of our nation's technological strength not be unnecessarily diminished.

In the view of the Society the decision of this Court in this case can have an effect on chemical research for the years to come, not only on research on pesticidal chemicals, but also on the growth of the chemical industry; on chemistry programs at universities; and on the employment of chemists; as well as on the ability of chemistry and chemists to contribute in an optimum way to the public welfare.

The Society respectfully requests the opportunity to express and explain its concern, and moves this Court for leave to file the annexed brief as Amicus Curiae.

Respectfully submitted,

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## INDEX


| | | Page |
|---|---|---|
| SUMMARY OF THE ISSUES OF CONCERN | | 2 |
| DISCUSSION | | |
| I. | Applied Scientific Research in the Chemical Field Is an Outgrowth of Pure Science | 2 |
| | A. Unpatented compounds in the public domain are not necessarily available to the public | 2 |
| | B. The literature of chemical science is a valuable resource | 3 |
| | C. The Chemical Registry System of the American Chemical Society alone lists 4,848,835 different chemical compounds | 4 |
| | D. Many more compounds would be deemed structurally obvious and unpatentable under United States patent law | 5 |
| | E. The example of propanil illustrates the public benefit from applied scientific research into uses of known compounds | 6 |
| II. | Agricultural Chemical Progress Requires Inventors and Innovators | 7 |
| | A. Inventive activity is directly related to the state of existing knowledge and the interest in creative research, in an economic context | 7 |
| | B. Scientific research in the field of biologically active chemicals draws both on the catalog of known compounds and on new compounds—"random" and "directed" research | 8 |

Page

C. Inventions that are never made cannot enhance competition ..... 10

D. Research is unpredictable and should not be penalized by changing the law of contributory infringement ..... 10

III. The Impact on Innovation ..... 12

A. Chemical innovation is important to the nation ..... 12

B. The Domestic Policy Review of Industrial Innovation recognized the innovation implications of the "use" patent controversy ..... 16

IV. The Meaning of §271 Is Clear ..... 14

A. The plain language of §271 has been accepted for over 25 years ..... 16

B. Compulsory licensing of use patents can adversely affect research and development activity ..... 17

CONCLUSION ..... 18



## TABLE OF CITATIONS

Page

STATUTORY PROVISIONS:

35 U.S.C. §271 ..... *passim*

OTHER AUTHORITIES

R.W. HANSEN, THE PHARMACEUTICAL DEVELOPMENT PROCESS: ESTIMATES OF DEVELOPMENT COSTS AND TIMES AND THE EFFECTS OF PROPOSED REGULATORY CHANGES IN PHARMACEUTICAL ECONOMICS, (Chein, ed. 1979). ..... 13,17

J. SCHMOOKLER, THE RATE AND DIRECTION OF INVENTIVE ACTIVITY, (1962) ..... 7

Kunz-Hallstein, *The Revision of the International System of Patent Protection in the Interest of Developing Countries,* 10 International Rev. of Industrial Property and Copyright Law, 649 (1979) ..... 14

Wooton, *University Licensing Operations,* 78 Patent and Trademark Review, 3 (1980) ..... 16,17

*Innovation and Private Investment in R&D,* Chemical Engineering News, April 30, 1979 ..... 13

*How Regulation is Impacting on Pesticide Research,* Farm Chemicals, Sept. 1978 ..... 13

Government Domestic Review of Industrial Innovation Subcommittee for Patent and Information Policy, Draft Report, Feb. 6, 1979, U.S. Dept. of Commerce ..... 15,16

Ernst & Ernst, *1978 Industrial Profile Study,* National Agricultural Chemicals Association ..... 17

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## BRIEF ON BEHALF OF THE AMERICAN CHEMICAL SOCIETY AS AMICUS CURIAE

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## INTEREST OF THE AMERICAN CHEMICAL SOCIETY

The American Chemical Society is a non-profit scientific and educational organization, founded in 1876, and now the largest scientific organization devoted to a single discipline: chemistry. The interest of the Society in the question before this Court is explained in the Motion for Leave to File a Brief.

## SUMMARY OF THE ISSUES OF CONCERN TO THE AMERICAN CHEMICAL SOCIETY

The major legal issue of this appeal appears to be whether, under § 271 of the Patent Act of 1952, the inventor/patentee of a new use for a known chemical compound which is not a "staple" article can refuse to grant licenses to contributory infringers of the use patent, but can nevertheless himself sell the product and enforce the patent against such contributory infringers.

The American Chemical Society is concerned about the possible effects on scientific research of a change in interpretation of the law surrounding contributory patent infringement—effects on the ways research is conducted and on the incentives for developing the fruits of scientific research.

The immediate impact of a reversal of the decision of the Court of Appeals would be to exempt from the reservoir of potential new products the large number of chemical molecules in the scientific literature for which no practical utility has yet been discovered. Heretofore, the generally accepted interpretation of § 271 in the agricultural chemical field has enabled the development of new products supported by "use" patents of the sort here at issue. Continuation of this practice will enhance the progress of science and is in the public interest.

## DISCUSSION

### I. APPLIED SCIENTIFIC RESEARCH IN THE CHEMICAL FIELD IS AN OUTGROWTH OF PURE SCIENCE

#### A. Unpatented Compounds in the Public Domain Are Not Necessarily Available to the Public

In the case at bar the chemical compound "propanil" is unpatented and unpatentable. Many chemical compounds are unpatentable for a variety of reasons, as shown below. To describe an unpatentable compound as "in the public domain"



may be highly misleading. This suggests that such compounds are readily available to the public—when in fact most "known" compounds are not available, never have been available, and never will become available unless the next step is taken: the discovery, by scientific experimentation, of a potentially valuable use of the chemical compound.

The history of chemical scientific research demonstrates that there has always been a dichotomy between pure scientific research, studies of the properties of matter—this being the foundation of chemical science—and applied scientific research and development of practical uses for chemical products.

Chemical compounds for which such practical utility has not been developed are excluded from participation in patent systems. The thrust of patent systems is to seek and encourage advances in applied science. In the chemical field this takes the form of finding new uses of chemical compounds. History shows that such new uses of chemicals have indeed been developed for the benefit of mankind. The American Chemical Society urges that artificial barriers not be placed in this field of applied science, by introducing the irrelevant distinction of whether or not the chemical compound itself may be the subject of a patent.

#### B. The Literature of Chemical Science Is a Valuable Resource

Over the past 150 years chemistry has shared and in many cases led the extraordinary growth of understanding of our universe and its properties. The curiosity and creativity of chemists around the world, both the so-called pure scientists and the applied scientists, have enabled each to build on knowledge previously generated, and each to disseminate new findings for others to build upon. There is a strong tradition of publication in the chemical sciences, and there is an enormous volume of scientific journals in both pure and applied chemistry devoted to this tradition. The American Chemical Society alone publishes twenty-three journals, in the pure sciences

—such as the "Journal of Organic Chemistry", the "Journal of Physical Chemistry", "Biochemistry", "Analytical Chemistry", etc., and in applied chemistry, such as "Environmental Science and Technology", the "Journal of Agricultural and Food Chemistry", etc.

Much of this chemical literature is devoted to the preparation and study of the behavior and properties of chemical molecules. Many chemical compounds are synthesized in university research laboratories in connection with studies at the forefront of chemical knowledge, relating to new and interesting properties of matter; and many compounds have been prepared at research institutions and industrial research laboratories with specific applications in mind. Theoretical studies and applied research have inspired chemical scientists to synthesize and describe molecules of extraordinary variety and increasing complexity, and the volumes of scientific knowledge resulting from this work is a resource of inestimable value.

### C. The Chemical Registry System of the American Chemical Society Alone Lists 4,848,835 Different Chemical Compounds

The American Chemical Society has undertaken to keep track of known chemical compounds, their properties, and their uses. In 1907 the Society commenced the publication of *Chemical Abstracts*, which in abstract form presents a full collection of and reference to the worldwide chemical literature. (In 1979 *Chemical Abstracts* included abstracts of 436,887 printed publications from 18,684 scientific journals from over 100 countries, patents of 26 countries, and other sources around the world.) In 1965, taking advantage of the advances in information handling available through computer science, the Society established the Chemical Registry System, a computerized registry of all compounds identified in the worldwide chemical literature and indexed for *Chemical Abstracts*. Compounds made prior to the start of the system come into the registry only when they are referred to in later published literature indexed for *Chemical Abstracts*.



As of March 5, 1980 the Chemical Registry System listed 4,848,835 chemical compounds as fully defined unique substances. Growth of this system is at the rate of 350,000 compounds per year. The Chemical Abstracts Service estimates that between 50% and 60% of all chemical compounds ever prepared are included in this list. Prior to the start of the Chemical Registry System other indexes of chemical compounds were available—the *Chemical Abstracts* index going back to 1907 and chemical compound indexes published both in Germany and in England starting in the 1800's. Thus there are estimated to be another 3 to 4 million compounds that are "known" to the literature and readily retrievable by established literature search techniques, and thus unpatentable if now synthesized and studied.

By contrast, the number of chemical compounds in the inventory list recently compiled by the EPA under the Toxic Substances Control Act was less than 47,000 as of October 1979. One may add to this number those chemicals listed in compliance with other statutes (including pesticides, pharmaceuticals and intermediates for pharmaceuticals) and it appears to be a fair count that about 50,000 chemical compounds are available in commerce in the United States.

This contrast between the number of compounds deemed "old" or "known" and therefore unpatentable, and those actually available in commerce, is at the root of our concern.

### D. Many More Compounds Are Deemed Structurally Obvious and Unpatentable under United States Patent Law

In addition to this extraordinary number of "known" compounds, the patent law provides that compounds which are considered to be "structurally obvious" and otherwise closely related to or obvious from the chemical literature may also be unpatentable. Many more compounds might be held unpatentable because they are comprised within a generic formula or otherwise described on paper, although they may never have

been prepared. It is conservative to estimate that, under United States patent law, some high multiple of the five million chemical compounds included in the Chemical Registry System could be deemed unpatentable. The vast majority of such compounds have never been actually made and have no known practical utility. Yet each of these compounds is considered to be in the public domain, and is indeed available to the public in the sense that anyone might seek to prepare the compound and to explore its properties and its uses. Only when a use is discovered, a use having value to the public, does a motivation develop to produce the compound.

This fact is at the heart of our concern about the impact of the case at bar on applied scientific research. Applied research is research with a purpose, normally an industrial, profit-seeking purpose and therefore normally research which is fostered by patent systems. Surely this reservoir of millions, literally millions, of chemical compounds should not be excluded from the scientist's attention, by denying to the scientist adequate patent protection for the possible discovery of practical uses for such compounds.

### E. The Example of Propanil Illustrates the Public Benefit from Applied Scientific Research into Uses of Known Compounds

Far-reaching public benefits have flowed from applications of chemical compounds in health, in agriculture, in production, in the quality of our technology-based economy. Chemical advances have been at the forefront of modern technology. Chemical treatment and adaptation of chemical compounds form a vital part of applied science and industry. The value to agriculture of the discovery that the compound called propanil controls weeds in the environment of rice plants would be the same whether propanil was one of the millions of "known" compounds with no previously known value, or whether propanil was itself new and patentable. The 1952 Patent Act, in §271, had the practical effect of minimizing the impact of this



distinction in the chemical field. The result has been to foster research in the agricultural chemical field by enabling an unhindered search for biological properties in the vast body of known chemical structures.

## II. AGRICULTURAL CHEMICAL PROGRESS REQUIRES INVENTORS AND INNOVATORS

### A. Inventive Activity Is Directly Related to the State of Existing Knowledge and the Interest in Creative Research, in an Economic Context

Many scholars, economists and scientists, have been concerned with the state of inventive activity in the United States. It is accepted that the state of knowledge at any given time is a primary factor in the potential for useful advances. "Invention" is a goal of applied research, which is conducted principally in industrial laboratories, by scientists who normally were schooled in pure science. To quote a scholar in this field:

> We assume that the growth of modern western industrial technology has been primarily the result of the interplay of (1) changes in the state of knowledge and (2) changes in industry.[1]

It is a truism that the scientific mind seeks a challenging, interesting occupation:

> Changes in the state of knowledge can influence inventive activity by affecting either (1) the prospective cost of making an invention and thereby the net profit anticipated from it; or (2) the intrinsic interest of explorations in different fields of technology. While analytically distinct, (1) and (2) are probably often impossible to differentiate in practice: though an employer may finance the pursuit of an idea because new knowledge reduces its prospective cost, his hired inventors may pursue the idea mainly because they find it interesting.[2]

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[1] J. Schmookler, THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS (1962) at 195.

[2] *Id.* at 195-96.

At the core of this sociological analysis of the inventive process is the understanding that, the broader the base of available scientific knowledge, the better the potential for new inventions—provided that economic conditions are favorable:

> [T]he answers . . . will be found primarily in the anticipated costs and benefits—with risk preferences, intellectual curiosity, and purely random factors undoubtedly also playing a part. . . The supply of inventions is in a sense determined by the number of creative individuals skilled in the technical arts, and by the state of knowledge which affects the conversion of inventive effort into inventive output. The demand for inventions, in turn, is presumably determined by economic conditions.[3]

The chemist working in the scientifically interesting, and industrially important, field of chemical/biological activity is indeed interested in exploring the potential value of those molecules, obscure or not, that have been and can be produced. The chemist inventor, if faced by a patent situation which would eliminate for economic reasons investigations of the biological activity of compounds that have already found their way into the crowded literature, would surely feel that such a situation would impede scientific progress. Nor does there appear to be any countervailing public benefit. The public benefit would be, we submit, in continuing to foster research into new uses of known compounds, in keeping with the ruling of the Court of Appeals below.

**B. Scientific Research in the Field of Biologically Active Chemicals Draws Both on the Catalog of Known Compounds and on New Compounds—"Random" and "Directed" Research**

Living organisms are complex systems, and despite enormous progress it is still not predictable how a plant or animal will respond to a particular chemical. Much research is being done on the relationship between chemical structure and

[3] *Id.* at 197.



biological activity of various types, and yet research directors and scientists in this field continue to find it worthwhile to work with and screen a wide variety of chemical structures for biological activity.

Thus, the search for biological activity in living systems proceeds on two fronts, the random screen and the directed research. In both of these areas there is a large component of empirical science, wherein increasingly complex chemical structures are investigated for activity in agricultural pest and weed control, as plant growth stimulants and regulants, in treatments of diseases of living organisms, and in other biological environments.

In the random screening approach, known compounds and examples of many types of molecular structures are sought from various sources, often from universities and research institutes where chemical compounds have been prepared for other purposes, normally in pursuit of a project in pure research and of scholarly import, with the results usually published in scientific journals. Such random screening programs are common in the search for biological activity, although they are a notoriously expensive method of developing compounds which can lead to further study: such a program is carried out by the National Cancer Institute in screening the broadest possible spectrum of compounds for useful activity.

The applied scientist also carries out what is sometimes called "directed research", wherein the chemist attempts to design compounds with the sought-for activity, based on the scientist's studies of the literature and past knowledge, with a heavy dose of scientific intuition. Such compounds are often new and patentable, but may turn out to be "known" in the chemical literature. Useful chemical products, having value in plant and animal systems, have been found following both general approaches to research.

There is a vital public interest in providing to the scientist the broadest possible scope with which to work. The plain

language of Section 271 as written, and as interpreted by the court below, appears to serve this public interest.

### C. Inventions That Are Never Made Cannot Enhance Competition

Even a superficial observation of the agricultural chemical industry demonstrates that competition has been fostered by the continuing introduction of new products having improved biological properties. New products afford the consumer a choice not only as to price, but as to the properties and performance characteristics of a variety of products, one or more of which may be better suited for his particular needs than others. These new products are heavily research dependent and their introduction is accompanied by disproportionately high investment costs.

It is in the interest of the ultimate user of these products, the farmer, to have a continuing supply of new pest-control agents: as resistance builds in the target pests, or to achieve safer products with lower residues, or to adjust to changing pest populations, or to achieve labor-saving economies. Competition is not promoted by forced licensing of an existing product, but rather by the need to invent around, and improve upon, a product of a competitor.

We assume that those industries engaged in research in the crop protection field would adjust to a change in the interpretation of §271 and avoid products for which no action for contributory infringement may lie in the United States. But to what end? Inventions that are never made cannot benefit the farmer, the public, or our national industrial strength.

### D. Research Is Upredictable and Should Not Be Penalized by Changing the Law of Contributory Infringement

The possiblity of different laws governing methods of selling a patented product and an unpatented non-staple product, in both cases for a newly discovered use, would itself be a deterrent to innovation. Researchers would be constrained to



try to limit their research to patentable compounds. But research usually doesn't work that way. Where the search for biological activity, whether random or directed, will lead cannot be determined in advance. Only when activity has been detected, and perhaps optimized through a series of modifications in the active molecules, is it clear where the research has led. If the optimum compound is not patentable, perhaps because of some academic experiment carried out decades ago, further development will surely be influenced by this Court's decision in the case at bar.

And even if the useful compound should be found patentable, the patentee would have no real sense of security if § 271 is interpreted to require licensing of competitors whenever the compound claim should fail. A potential competitor might succeed, perhaps by a more exhaustive literature search than was available earlier, to find "prior art" more pertinent than that found by the Patent Office, and thus invalidate the compound claim. Although the American Chemical Society seeks to process, abstract, and index the world's chemical literature, we are only too aware of the frailties of even this information system. For example, the Registry of Chemical Compounds does not include compounds comprehended within a generic disclosure but not actually described, nor compounds named in patents or other publications for which physical constants are not provided; nor patents of some countries; nor sales brochures or other lists of experimental chemicals, etc.

These gaps, if they be gaps, in the coverage of the available literature search services may some day be remedied. They do not appear to hamper the progress of pure science, but many a patent applicant has been surprised by a change in his patent position due to subsequently-discovered references.

"Obvious" chemical compounds for which there is no known use are a valuable resource, the exploration of which should be encouraged in the public interest. Whether a compound is patentable or not is a distinction important in patent law, but as to the single patentable new use it is a

distinction without economic significance. Consequently there is no justification for treating that single use differently, depending on the status of the product, in one case excluding competition in the product, in the other case requiring it.

## III. THE IMPACT ON "INNOVATION"

### A. Chemical Innovation is Important to the Nation

Research on chemical compounds and their uses has made countless contributions to our way of life. Notable have been contributions to human health and the production of food. In the field of agrochemicals (insecticides, herbicides, fungicides, nematicides, and plant growth regulators) there have been remarkable advances. Only a decade ago insect pest control required the use of highly persistent chemicals at rates of 1 to 3 pounds per acre. Today new chemicals, of greatly improved environmental safety, control major crop insects at rates ranging from 0.2 pound per acre to as low as 0.01 pound per acre. Selective herbicides such as propanil have changed the nature of agricultural labor and costs. Even so, in many parts of the world crop yields are inadequate, major portions of crops are destroyed by pests before harvest, and more is lost while the harvest is in storage. Much remains to be done, and there seems little doubt that safer and more effective chemicals can be found to help meet the needs of the hungry world population.

The search for new chemical uses is the first step in the innovation process. Business risk decisions pervade every step in research, development, production, federal registration, and marketing of a biologically active compound. These steps toward commercialization (together called "innovation"), cannot possibly be fostered by an interpretation of the law which would have the effect of putting added risk into business decisions.

The research phase of the innovation process should be based on as large a reservoir of chemical structures as possible, and surely should not exclude compounds just because they are



"known". If the newly discovered use of a compound with a structure previously reported or implied fills a societal need, the patentee should be enabled to earn a return on the patent property—a return that is fairly reflective of the value of the invention. A chemical molecule with no known use has no more social value than a chemical compound that has not yet been conceived. The total costs of innovation are scarcely different: the risk, the commitment, the capital, are the same. It is repugnant to the national interest in technology-based industrial progress, to establish by law a system whereby a usurper of a patentable use for an unpatentable compound can become a participant in a market without incurring any of the costs or risks of the discovery, research, and development of the chemical's use for that market.

Much has been written about the escalating costs of developing a new pesticidal chemical. It has been estimated that to take a new pesticide from discovery to full registration in the United States required 7-10 years and $10-20 million dollars (1977 figures).[4] Costs for pharmaceutical chemicals are even higher,[5] and current inflated costs are higher yet.

Last year the American Chemical Society analyzed[6] recent trends in research and development, innovation, and productivity in the United States, and offered recommendations for enhancing the technological strength of the United States. The statement described the innovative process and its underlying economics:

> Industrial innovation is a complex process usually involving many steps and many factors. Generally the most common process starts with the discovery of a new fact or

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[3] *Id.* at 197.

[4] *How Regulation is Impacting on Pesticide Research,* Farm Chemicals, Sept. 1978 at 26-34.

[5] R.W. Hansen, THE PHARMACEUTICAL DEVELOPMENT PROCESS: ESTIMATES OF DEVELOPMENT COSTS AND TIMES AND THE EFFECTS OF PROPOSED REGULATORY CHANGES IN ISSUES IN PHARMACEUTICAL ECONOMICS, (Chein, ed. 1979) at 151-187.

[6] *Innovation and Private Investment in R&D*, Chemical & Engineering News, April 30, 1979, at 36-44.

phenomenon resulting from a basic research program or occasionally from accidental observation. This is followed by an applied research program to find a use or an application of this discovery, or a completely unrelated research program to find a solution to an existing problem or need. Identification of a potential application is followed by a development process including, among other things, scale-up, long-term testing, toxicity or safety evaluation, and market surveys. The final step is commercialization, which involves investment in a new plant, market development, and establishment of a distribution system.

The driving force for the whole innovation process is the expectation of a satisfactory return on invested capital. If any factor in the process increases the overall cost or lengthens the time from the basic discovery to successful commercialization of a product, the return on investment will be decreased and the investment will appear to be less attractive. If investors even perceive at any stage in the innovation process that the return on investment will not be sufficient to justify the risk involved, no innovation will result. . . .[7]

The value of patent protection as an incentive to innovation is recognized virtually universally:

> Patents are granted on considerations of economic policy. The objective of patent protection is to promote industrial development by stimulating technical progress. According to the theory of the mechanisms of technical progress, *patent protection delays the beginning of the imitation phase* in the innovation process in order to assure that invention and innovation are economically worthwhile.[8] (emphasis added)

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[7] *Id.* at 38.

[8] Kunz-Hallstein, *The Revision of the International System of Patent Protection in the Interest of Developing Countries*, 10 International Rev. of Industrial Property and Copyright Law, 649, 652 (1979).



Whether a patent will in fact be an adequate incentive will depend on the scope of the protection afforded. It is becoming more and more widely recognized that the prospect of a position of exclusivity is essential for making the investment required to bring an invention from conception to commercial utilization. Two of the findings of the Harbridge House Study of utilization of government-owned patents highlight this fact:

> Government ownership of patents with an offer of free public use does not alone result in commercialization of research results.
>
> A low, overall commercial utilization rate of Government-generated inventions has been achieved; that rate doubled, however, when contractors with commercial background positions were allowed to keep exclusive commercial rights to the inventions.[9]

Universities, too, have come to appreciate that the mere publication of research results is insufficient to stimulate the further development of their discoveries so as to contribute to the public good:

> Universities are beginning to realize that any new technology which is open, available, and free to everyone will usually not qualify as a new commercial product. Almost every new invention (particularly those coming from a university), requires additional development before it is ready for the market. To this development cost must be added the costs of advertising, sales training, field support network, inventory, spares, etc., and this cost to the company can run up into the millions of dollars. No manager of a commercial firm, responsible for his company's profit and loss statement, will make that kind of an investment unless he has some assurance that another

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[9] Government Patent Policy Study, for the FCST Committee on Government Patent Policy. Contract No. 7-35807, as quoted in Government Domestic Review of Industrial Innovation, Subcommittee for Patent and Information Policy, Draft Report, February 6, 1979, U.S. Department of Commerce, at 12.

company won't be on the market with the same product at half the price six months after the new product is introduced! Without patent protection and a licensing function therefor, the university's chances of getting its research results to the market for use by the public is almost nonexistent.[10]

### B. The Domestic Policy Review of Industrial Innovation Recognized the Innovation Implications of the "Use" Patent Controversy

In 1978 President Carter, concerned about the apparent decline in industrial innovation in the United States, initiated a Domestic Policy Review and established advisory committees to study various aspects of the problem. As a result the advisory Subcommittee for Patent and Information Policy offered several specific recommendations on how innovation might be stimulated.[11] Included was the recommendation that patent protection be available for use-specific formulations of a compound not itself patentable. The Subcommittee observed:

> Without such a possibility for effective patent support, discoveries of new biological uses for known compounds will not enter the innovation sequence because of the recognized high cost of innovation in these fields.[12]

## IV. THE MEANING OF §271 IS CLEAR

### A. The Plain Language of §271 Has Been Accepted for Over 25 Years

The plain reading of §271 has been relied upon since 1952 by researchers and inventors in the agricultural chemical field. Until the district court decision below, the patentability status of the active ingredient itself was not a major factor in

[10] Wootten, *University Licensing Operations*, 78 Patent and Trademark Review 3 (1980).

[11] Government Domestic Review of Industrial Innovation, Subcommittee for Patent and Information Policy, Draft Report, February 6, 1979, U.S. Department of Commerce.

[12] *Id.* at 16.



risk/investment decisions. If §271(d) was never intended to be so construed—as urged on behalf of Petitioners—the significance of its implications has evaded the attention of scientists, research directors, and legal scholars.

The legislative history and commentaries before and after the 1952 Patent Act continue to support the plain reading of §271. The overriding public interest is served by an affirmation of the text, of the intent of Congress, and of the circuit court below.

### B. Compulsory Licensing of Use Patents Can Adversely Affect Research and Development Activity

As economic studies have shown, and as emphasized by the Domestic Policy Review, various disincentives to chemical R&D have already caused a diversion of effort from the search for new products.[13] Figures for the agricultural chemical industry for 1977 show that approximately 65% of R&D expenditure was for new product research;[14] employing over 5,000 people, of whom 38% had either a master's or a doctor's degree.[15] This highly professional trained cadre of scientists has an interest in the scientific scope of their work and in the public benefit of successful research. Scientists working in other areas of research are similarly interested in preservation of the increasingly tenuous incentives to the advancement of science and technology.

Although the effects of a reduction in the patent incentive cannot be quantified, we believe that any adverse impact on research and development in the United States should be avoided if possible. Other countries in the industrialized world are tending toward more effective patent incentives, and do provide protection to the discoverer of a new use of a known compound.

[13] Wooten, *supra* note 11.

[14] Hansen, *supra* note 5 at 30.

[15] Ernst & Ernst, *1978 Industry Profile Study*, National Agricultural Chemicals Association.

The stimulus to research and development, by providing the possibility of a fair return to the patentee based on the market value of the discovery, is in keeping with traditional incentive concepts, proven in this country; is fair to the patent holder; and supports the interest of the nation in technological advance and industrial strength.

## CONCLUSION

The interpretation of § 271 of the Patent Act of 1952, as relied upon by the chemical community and as affirmed by the Fifth Circuit below, is supported by law and equity, and is in the interest of scientific research and innovation. The judgment of the Court of Appeals should be affirmed.

Respectfully submitted,

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